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AUTHOR Thompson, Anne R.; And Others
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ABSTRACT

This resource guide is designed to provide a quick reference for professionals (employment recruiters and counselors in vocational rehabilitation, disability services, and career services), who work with college students with disabilities, in incorporating assistive technology into planning for postsecondary education and employment. First, types of assistive technology and assistive technology evaluations are reviewed. Steps for using the guide are described and assistive technology categories are outlined, including adaptive computer applications, aids for communication, aids for daily living, environmental control systems, home/work site modifications, prosthetics and orthotics, seating and positioning, wheelchairs/mobility aids, and vehicle modifications. The benefits of using assistive technology are also identified. The next part of the guide is divided into sections on possible disability deficits and their technological solutions. Disability categories discussed include blindness/visual impairments, deafness/hearing impairments, learning disabilities and attention deficit disorders, orthopedic/mobility impairments, speech and language disorders, and other disabilities. Each disability is described, a chart illustrating possible deficits and possible technology solutions is provided, and a case study is presented along with the assistive technology solution. The guide also includes lists of different types of specialists, funding resources, electronic mail resources, national organizations, and state resources. A check list of comprehensive career planning and a glossary of terms is also included. (CR)

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College Students With Disabilities *and* Assistive Technology

A Desk Reference Guide

Anne R. Thompson
Leslie L. Bethea
Harry F. Rizer
Melanie D. Hutto

Mississippi State University

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College Students with Disabilities and Assistive Technology: A Desk Reference Guide

Spring 1997

Incorporating Assistive Technology into Planning for
Postsecondary Education and Employment

Designed for:
Vocational Rehabilitation Counselors
Disability Services Counselors
Career Services Counselors
Employment Recruiters

Anne R. Thompson, Ph.D., CRC
Leslie L. Bethea, M.S., CRC
Harry F. Rizer, Ed.D.
Melanie D. Hutto, Ph.D., CRC, LPC
Mississippi State University

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College Students With Disabilities and Assistive Technology: A Desk Reference Guide

This resource guide is designed to provide a quick reference for professionals who work with college students with disabilities in postsecondary education and employment. The guide suggests ways that assistive technology may improve and expand the academic, career, and employment opportunities of students with disabilities.

What is assistive technology?

Assistive technology is any device or process that assists a person with a disability to do something that could otherwise be difficult or impossible to accomplish.

What is an assistive technology evaluation?

An assistive technology evaluation is the process of determining which device best matches the person's needs and preferences.

Who is this guide designed to assist?

Vocational Rehabilitation Counselors

who refer students for postsecondary training, promote transition to employment, and consult with potential employers.

Disability Services Counselors

who promote campus life and academic success for students with disabilities.

Career Services Counselors

who promote transition from school to employment and facilitate student summer employment.

Employment Recruiters

who recruit college graduates for employment.

How

to Use This Guide: Steps To Follow When Working with a Student or a Potential Employee

Step 1: With the student, determine the abilities and functional limitations.

Example: Sue has a spinal cord injury and uses a wheelchair for mobility but she also has limited use of her fingers for fine motor skills. She is knowledgeable in basic computer word processing and can point her finger and type with one hand. Using this process, Sue finds that she fatigues easily.

Step 2: Determine what the disability prevents or impairs the student from doing that he/she would like to do.

Example: Sue types too slowly and wants to increase her speed and ability to work without fatigue. She would also like to improve her accuracy on the computer as she sometimes strikes extra keys.

Step 3: In the Guide, refer the student to the relevant type of disability. Check the categories of skill deficits and the possible assistive technology solutions.

Example: Sue might look under Orthopedic/Mobility Impairments (O/M) and investigate word prediction programs, modification of keyboard control systems, and alternate input devices. Sue can use the Definition of Terms section to learn more about words that are unfamiliar.

Step 4: Refer the student to the cross-coded specialists listed under the case study for each type

of disability. Note the questions in the boxes and encourage the student to contact the specialists that are cross coded.

Example: Sue might note the codes for specialists in the case study and refer to the Specialists section. She may need to contact an assistive technology specialist (ATS) and/or an occupational therapist (OT). She may need to talk to her vocational rehabilitation counselor (VR) for more information and/or referral to the specialists.

Step 5: Provide the student with appropriate resources from the list under Resources or the state offices listed under State Tech Act.

Example: Sue might search the Resources section to contact the State Vocational Rehabilitation Office, RESNA, or AHEAD for more information. She may want to join a LISTSERV discussion group such as EASI for answers to her specific technology questions. Her State Tech Act Office may be able to provide assistive technology devices on loan for a trial period.

Step 6: Review the Check List for Career Planning with the student.

Example: Sue can review the Career Checklist to determine if she has completed all the steps important to successful transition to employment. From the checklist, she may find that she does not know the entry level requirements of her career choice and will need to conduct an informational interview with someone who is employed in a similar job.

Assistive Technology Categories

Adaptive computer applications

input and output devices (voice, braille), alternate access aids (headsticks, light pointers), large-print screens, modified or alternate keyboards, switches, special software that enable persons with physical, sensory, or cognitive disorders to use a computer

Aids for communication

hearing aids, TDDs, and augmentative and alternative communication devices that provide a means for expressive and receptive communication for persons with sensory, communication, or cognitive disorders

Aids for daily living

self-help aids for use in activities such as eating, bathing, cooking, dressing, toileting, and home maintenance for persons with physical, sensory, or cognitive disorders

Environmental control systems

primarily electronic systems that enable persons with physical or sensory disorders to control various appliances, electronic aids, and security systems in their room, home, or other surroundings

Home/work site modifications

structural adaptations or fabrications in the home, worksite, or other area (ramps, lifts, bathroom changes, visual alerting systems) that remove or reduce physical barriers for persons with physical, sensory, or cognitive disorders

Prosthetics and orthotics

replacement, substitution, or augmentation of missing or malfunctioning body parts with artificial limbs or other orthotic aids (splints, braces) for persons with physical disorders

Seating and positioning

accommodations to a wheelchair or other seating system to provide greater body stability, trunk/head support and an upright posture, and reduction of pressure on the skin surface (cushions, contour seats, lumbar) for persons with mobility impairments

Wheelchairs/mobility aids

manual and electric wheelchairs, mobile bases for custom chairs, walkers, three-wheel scooters, and other utility vehicles for increasing personal mobility

Vehicle modifications

adaptive driving aids, hand controls, wheelchair and other lifts, modified vans, or other motor vehicles used for personal transportation for persons with physical disorders

Adapted from: The Provision of Assistive Technology in Rehabilitation (p. 109) by Seventeenth Institute on Rehabilitation Issues, 1990, Fayetteville: Arkansas Research and Training Center in Vocational Rehabilitation

**Assistive technology is a process
as much as a product.**

Points for Consideration of Technology Options

Service providers who work with college students with disabilities need awareness of assistive technology aids and devices that will improve the student's academic success and career opportunities, and increase the candidate's qualifications for employment.


<p>Vocational Rehabilitation Counselor</p> <p><u>Assistive technology may:</u></p> <ul style="list-style-type: none"> • advance considerations for postsecondary education • increase career opportunities • increase student independence • resolve transportation issues • accomplish activities of daily living 	<p>Disability Services Counselor</p> <p><u>Assistive technology may:</u></p> <ul style="list-style-type: none"> • advance academic standing • increase student independence • further time-management skills • allow equal access to the campus environment • increase participation in classroom activities
<p>Career Services Counselor</p> <p><u>Assistive technology may:</u></p> <ul style="list-style-type: none"> • expand choice of majors • increase career opportunities • increase part-time job opportunities • improve job search skills 	<p>Employment Recruiter</p> <p><u>Assistive technology may:</u></p> <ul style="list-style-type: none"> • improve opportunities to qualify for entry level employment • enable to perform essential job functions • allow equal access to the workplace

**Assistive technology considerations should center on the needs of the individual.
What does the disability prevent or impair the student from doing?**

Blindness/Visual Impairments

Over 4.3 million Americans have some type of visual impairment. Visual impairments include blindness and other disorders that may affect the central vision acuity, the field of vision, color perception, or binocular visual function. The American Medical Association defines legal blindness as visual acuity not exceeding 20/200 in the better eye with correction, or a limit in the field of vision that is less than a 20 degree angle (tunnel vision). Legal blindness may be caused by tumors, infections, injuries, retrolental fibroplasia, cataracts, glaucoma, diabetes, vascular impairments, or myopia. The resulting functional limitations will vary widely, as will the assistive technology and mobility aids recommended. Some students may not require special mobility assistance; some may choose a sighted guide; others may use a white cane. Still others may choose to use a dog guide, which (legally) may accompany the owner anywhere. Although assistive technology prescriptions are highly individualized for visual impairments, general solution categories are presented as a beginning discussion point.

Possible Deficits	Possible Technology Solution
Increased sensitivity to glare	Glare reducing screen Darkened room or work station Reversed polarity (white letters; black screen) Color transparencies
Inability to see small text and graphics	Optical aids <ul style="list-style-type: none"> • magnifying glasses • small hand held telescopes Screen magnification overlays Large monitor (17" or larger) Screen reading program with speech synthesizer and headphones Closed circuit television (CCTV) Large print software

Possible Deficits		Possible Technology Solution
Blind, with no light perception		<p>Computer with large hard drive and large capacity memory banks</p> <p>Books on audio tape</p> <p>Brailled documents/books</p> <p>Screen reader with speech synthesizer and headphones</p> <p>Scanner with optical character recognition (OCR)</p> <p>Refreshable braille displays</p> <p>Braille translating software, braille printers</p> <p>Braille notetakers</p> <p>Tape recorder with indexing capability</p>
Mobility that ensures safe travel		<p>Wide aisles without obstacles</p> <p>Long telescoping canes, laser canes</p> <p>Guide dogs</p> <p>Electronic travel aids</p> <p>Brailled signage</p> <p>Tactile building and floor markings</p> <p>Audible signals, tones</p> <p>Tactile maps</p> <p>Handheld telescopes</p>
Needs of daily living		<p>Clocks, calculators, scales, etc. with speech output</p> <p>Home medical aids with digitized speech output</p> <p>Special controls for appliances that have large print or have tactual markings</p> <p>Braille-embossed labels for marking colors, sizes of clothing</p> <p>Large print and braille telephone book and calendars</p> <p>Large print checks/check books</p> <p>Writing guides for checks, application forms, and other signature needs</p>

Case Study of a Student With a Visual Impairment

Capitalized initials in parenthesis refer to Specialists (page 27)
who may provide technology-related information, referrals, and/or sources of devices and equipment.

Bill is a senior in business who has a central vision loss. For the resulting deficit/functional limitation in visual acuity, he uses a hand-held magnifying glass to read text and a monocular telescope to read distant objects. He has his own computer and understands the basic computer operations. Bill wants to reduce the errors he makes in reading and increase the length of time that he is able to read without fatigue.

Vocational Rehabilitation Counselor

Objective:

To establish the student in competitive employment.

- What limitations does the disability pose for the student's employment? (ATS), (CP)

Disability Services Counselor

Objective:

To assist the student to improve his academic standing and completion of required college course work.

- Would assistive technology facilitate the student's capacity for longer study time? (ATS)

<p>Career Services Counselor <u>Objective:</u> To provide career counseling based on the student's interests and abilities.</p> <ul style="list-style-type: none"> • Would technology increase the student's career options and ability to perform the essential job functions in the career he has chosen? (VR), (ATS) 	<p>Employment Recruiter <u>Objective:</u> To interview and secure graduates for employment.</p> <ul style="list-style-type: none"> • Would assistive technology qualify him for employment? (ATS), (VR)
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Assistive Technology Solution

Bill was referred to an assistive technology specialist. Because he had a computer and had some usable vision, the specialist recommended the purchase and training for a speech synthesized screen reader with headphones. Duration and accuracy for reading were increased.

Deafness/Hearing Impairments

Over 20 million Americans have a hearing impairment of some type. A hearing impairment is any type or degree of auditory impairment while deafness is an inability to use hearing as a means of communication. Hearing loss may be sensorineural, which means one has difficulty in interpreting sounds; conductive, which means one has difficulty in hearing sounds; or a mixed impairment, involving both sensorineural and conductive. Hearing loss is measured in decibels and may be mild, moderate, or profound. A person who is born with a hearing loss may have language deficiencies and exhibit poor vocabulary and syntax. Many students with hearing loss may use hearing aids and rely on lip reading. Others may require an interpreter.

Possible Deficits		Possible Technology Solutions
Inability to receive any information in auditory form		<p>Text telephone</p> <p>Relay services for placing calls</p> <p>Computer-assisted access to text telephone</p> <p>Telephone answering machine with text telephone</p> <p>FAX communication</p> <p>Electronic mail</p> <p>Visual cues for auditory prompts</p> <p>Computer-aided transcription</p> <p>Signaling system</p> <p>Captioning systems</p> <p>Sign language training</p>

Possible Deficits		Possible Technology Solutions
<p>Inability to hear auditory information with background noise</p> <p>Inability to discriminate sounds of consonants in auditory information</p>		<p>FAX communication</p> <p>Electronic mail</p> <p>Headphones with jack</p> <p>Telephone amplifier</p> <p>Hearing aids</p> <p>Electronic amplification systems</p> <p>Assistive listening devices (ALD)</p> <p>Captioning systems</p> <p>Visual cues for auditory prompts</p> <p>Appropriate light for lip reading</p>
<p>Limited or poor speech</p>		<p>Grammar check software</p> <p>Spell check</p> <p>Word prediction programs</p> <p>Speech output voice box</p>
<p>Needs of daily living</p>		<p>Signaling systems convert sound to visible, tactile, or vibrating signals for:</p> <ul style="list-style-type: none"> ◦ doorbells ◦ telephones ◦ alarm clocks ◦ baby signaler ◦ smoke alarm <p>Clip-on rear view driving mirror to increase peripheral viewing area</p>
<p>Inability to tolerate noise</p>		<p>Room acoustics that absorb sound</p> <p>Ear protection</p>

Case Study of a Student With a Hearing Impairment

Capitalized initials in parenthesis refer to Specialists (page 27)
who may provide technology-related information, referrals, and/or sources of devices and equipment.

Jennifer is a junior who has a hearing impairment and wears hearing aids. She finds it difficult to communicate on the telephone, hear what others are saying over background noise, or to discriminate sounds of consonants in conversation. She is having trouble following class discussions, hearing the auditory prompts on her computer, and is concerned about meeting the communication requirements in her career choice.

Vocational Rehabilitation Counselor

Objective:

To establish the student in competitive employment.

- Could assistive technology improve her employment opportunities? (Au), (ATS), (CP)

Disability Services Counselor

Objective:

To assist the student to improve her academic standing and completion of required college course work.

- Would assistive technology facilitate her class participation, computer abilities, and communication difficulties? (ATS), (Au)

<p>Career Services Counselor <u>Objective:</u> To provide career counseling based on the student's interests and abilities.</p> <ul style="list-style-type: none"> • Would technology increase her career options by improving her communication abilities? (Au), (VR), (ATS) 	<p>Employment Recruiter <u>Objective:</u> To interview and secure graduates for employment.</p> <ul style="list-style-type: none"> • Would assistive technology improve her qualifications for employment? (ATS), (Au)
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Assistive Technology Solution

Jennifer received a new evaluation by an audiologist and was fitted with hearing aids that are designed to reduce background noise. She was referred to an assistive technology specialist who recommended visual cues for auditory prompts on her computer. She also purchased a telephone amplifier with variable volume control. In her classes she is using assistive listening devices to aid in discussions and lectures. With these aids Jennifer's grades have improved and she is more confident about pursuing her career choice.

Learning Disabilities (LD)

It is estimated that between 15-20 percent of Americans have some type of learning disability. A learning disability is a permanent neurological disorder that affects the manner in which information is received, organized, remembered, and then retrieved or expressed. Students with learning disabilities possess average to above average intelligence. The disability is demonstrated by a significant discrepancy between expected and actual performance in one or more of the basic functions: memory, oral expression, listening comprehension, written expression, basic reading skills, reading comprehension, mathematical calculation, or mathematical reasoning.

Attention-Deficit Disorder (ADD) Attention-Deficit Hyperactive Disorder (ADHD)

ADD and ADHD are neurologically-based medical problems characterized by inattention, impulsivity, and sometimes hyperactivity. The results can lead to lifelong problems.

Learning disabilities, ADD, and ADHD vary from one person to another and are often inconsistent within an individual. Students may demonstrate one or more problem characteristics and the form may be mild, moderate, or severe.

Possible Deficits	Possible Technology Solutions
Difficulty completing tasks on time	<p>Computer software programs that promote organization of work:</p> <ul style="list-style-type: none"> • color monitor/ability to change background and foreground colors • outline with shapes and colors • color printer



Possible Deficits

Possible Technology Solutions

Read at lower than potential level:

- slow reading rate
- inaccurate comprehension
- poor retention
- incomplete mastery of phonics

Computer software programs that promote reading abilities:

- talking and large print word processors
- scanner with optical character recognition (OCR) system
- speech synthesizers
- screen enlargement
- multisensory reading program with customized text size, background and foreground colors, and voice characteristics

Talking dictionary to define and pronounce unfamiliar words

Four-track tape recorder

Poor tracking skills
(skip words, lose place, miss lines)

Color monitor/change foreground and background color

Write at lower than potential level:

- problems with organization, development of ideas and transition words
- difficulty communicating meaning
- poor sentence structure

Computer software programs that promote writing abilities:

- color monitor/ability to change background and foreground colors
- talking and large print word processors
- outline with shapes and colors
- graphics in place of words

Frequent spelling errors

Spell check
Word prediction programs

Incorrect grammar

Grammar check software

Possible Deficits	Possible Technology Solutions
Problems with concentration	Distraction reducing measures: <ul style="list-style-type: none"> • noise blocking headset • table top dividers
Difficulty following directions	Directions in writing
Poor ability to speak with fluency and/or sometimes to understand others <ul style="list-style-type: none"> • difficulty understanding oral language • poor vocabulary and word recall • difficulty with pronouncing multisyllabic words 	Computer software programs that promote verbal communication: <ul style="list-style-type: none"> • scanner with optical character recognition (OCR) system • speech synthesizers • talking and large print word processors Talking dictionary to define and pronounce unfamiliar words

Case Study of a Student With a Learning Disability and Attention-Deficit Disorder

Capitalized initials in parenthesis refer to Specialist (page 27) who may provide technology-related information, referrals, and/or sources of devices and equipment.

Ray is a junior with attention deficit disorder. He can only read for short periods of time and has poor comprehension and retention of the material. He depends on readers and tapes for reading assignments.

<p>Vocational Rehabilitation Counselor <u>Objective:</u> To establish the student in competitive employment.</p> <ul style="list-style-type: none"> • Could assistive technology improve his reading comprehension time and increase his opportunities for employment? (ATS), (LD), (ES), (T), (NP), (Psy) 	<p>Disability Services Counselor <u>Objective:</u> To assist the student to improve his academic standing and completion of required college course work.</p> <ul style="list-style-type: none"> • Would assistive technology increase his independence from readers and promote his academic success? (ATS), (ES), (LD)
<p>Career Services Counselor <u>Objective:</u> To provide career counseling based on the student's interests and abilities.</p> <ul style="list-style-type: none"> • Would assistive technology increase his career options? (ATS), (LD) 	<p>Employment Recruiter <u>Objective:</u> To interview and secure graduates for employment.</p> <ul style="list-style-type: none"> • Would assistive technology improve his qualifications for employment? (ATS), (VR)

Assistive Technology Solution


Ray was referred to an assistive technology specialist who recommended a multisensory reading program. Ray learned how to scan his reading material into a computer equipped with a voice synthesizer. He used an optical character recognition program to convert the printed page to computer text. This program permitted him to listen to written material, customize the text size, background and foreground color, and the voice characteristics. Using this technology, Ray has greatly increased his reading time and improved his comprehension.

Orthopedic/Mobility Impairments

A variety of orthopedic/mobility-related disabilities result from birth such as cerebral palsy, accidents such as spinal cord injury, or progressive neuromuscular diseases such as multiple sclerosis. These disabilities include conditions such as spina bifida, amputation, muscular dystrophy, cardiac conditions, cystic fibrosis, paralysis, polio/post polio, and stroke. Functional limitations and abilities vary widely even within one group of disabilities.

The environment of the college campus and many employment settings present a greater challenge for individuals with mobility impairments. More travel is necessary and longer periods of sitting are required. The revolution in wheelchair design in the past 10 years can provide proper seating, stability and ease of mobility that can avoid many problems common to wheelchair users.

Possible Deficits	Possible Technology Solutions
Fatigue, limited physical exertion	Correct keyboard positioning, flexible equipment in positioning of monitors, keyboards, table tops
Slow typing speed	Word completion or word prediction programs Abbreviation expansion programs
Inability to use multiple keystroke commands Strike keys by mistake due to tremors Better gross motor than fine motor dexterity	Modification of keyboard control systems Keyguard for computer, calculator

Possible Deficits		Possible Technology Solutions
Inability to use hands for input		<p>Computer with large hard drive and large capacity memory banks</p> <p>Alternate input devices such as voice recognition program, scanner, headpointer, mouth-operated joystick</p> <p>Page turning device</p>
<p>Limited hand use for input</p> <p>Inability to use the mouse</p>		Alternate input devices such as minikeyboard, track pad, touch window, split keyboard, Morse code input, track ball
Fine motor control but limited gross movement		Arm, wrist supports; keyguards; minikeyboard
Limited muscle strength, coordination, range of motion, stability		Arm, wrist supports Keyguards
Poor posture and body alignment		Customized seating and positioning
Nonambulatory		Wheeled mobility
Limited mobility		Canes, crutches, walkers
Inability to access transportation		Adaptive devices such as hand controls, steering devices

Case Study of a Student With an Orthopedic/Mobility Impairment

Capitalized initials in parenthesis refer to Specialists (page 27)
who may provide technology-related information, referrals, and/or sources of devices and equipment.

Judy is a senior with a spinal cord injury and uses a power wheelchair for mobility. She plans to graduate in the spring with a degree in accounting. Good computer skills are important to Judy's career plans but she has difficulty operating input devices requiring fine motor control and pressing multiple keys at the same time.

Vocational Rehabilitation Counselor

Objective:

To establish the student in competitive employment.

- What limitations does the disability pose for her employment? (OT), (ATS), (RE), (SM)

Disability Services Counselor

Objective:

To assist the student to improve her academic standing and completion of required college course work.

- Would assistive technology facilitate her keyboard skills? (OT), (ATS), (VR), (RE), (SM)

<p>Career Services Counselor <u>Objective:</u> To provide career counseling based on the student's interests and abilities.</p> <ul style="list-style-type: none"> • Would technology increase her career options and ability to perform the essential job functions in the career she has chosen? (OT), (ATS), (RE), (SM) 	<p>Employment Recruiter <u>Objective:</u> To interview and secure graduates for employment.</p> <ul style="list-style-type: none"> • Would assistive technology improve her qualifications for employment? (VR), (OT), (RE), (SM)
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Assistive Technology Solution


Judy contacted an occupational therapist and received an evaluation and training on a software program that modifies the standard keyboard to eliminate the need to press more than one key at a time. The program she is using also limits her entering unwanted keys and has increased her speed and accuracy on the computer. Judy contacted vocational rehabilitation to assist her in the purchase of the software programs that were essential to her employment.

Speech and Language Disorders

Approximately 14 million persons in America have a speech, voice, or language disorder. Speech and language disorders may result from hearing loss, birth-related condition, learning disability, or physical conditions. The disorder may result in stuttering, problems with articulation, voice disorders, or aphasia. Individuals with severe speech and language disorders may be nonspeaking.

Augmentative and Alternative Communication (AAC) refers to aids, strategies and techniques designed to enhance a person's existing communication skills. These AAC systems may be simple displays (pictures or words printed on cardboard displays), electronic devices (voice output devices with synthesized or digitized speech) or computer based systems (voice output in addition to traditional computer functions). AAC systems can be adapted to provide for the special needs of the individual.

Possible Deficits	Possible Technology Solutions
Limited speaking ability	<p>Augmentative devices such as:</p> <ul style="list-style-type: none"> • picture communication displays • computer with synthesized or digitized speech • electronic communication aids: <ul style="list-style-type: none"> - alternative input methods; switch scanning, alternate keyboards, mouse, joystick, touch screen and/or headpointer - encoding methods; pictures, abbreviation expansion, and/or word prediction - output methods; print, synthesized and/or digitized speech
Limited motor skills to operate computer with standard keyboard	Communication device used to operate computer

Possible Deficits		Possible Technology Solutions
Limited muscle control of fine motor skills		Alternative input methods such as switch with scanning, alternate keyboards, joystick, touch screen, and/or headpointer
Limited muscle strength, coordination, range of motion, stability		Arm, wrist supports Keyguards
Limited use of hands to operate computer		Switches and switch software
Limited gross motor skills but use of fine motor skills to operate computer		Trackball tools to enter data or perform mouse functions
Slow speed in keystrokes		Word prediction programs
Limited loudness level		Voice amplification device
Hearing loss		Telecommunications Device for the Deaf (TDD) Relay services for placing calls
Inability to use telephone		Telecommunications Device for the Deaf (TDD) Relay services for placing calls

Case Study of a Student with a Speech and Language Disorder

Capitalized initials in parenthesis refer to Specialists (page 27)
who may provide technology-related information, referrals, and/or sources of devices and equipment.

Patricia has cerebral palsy and is unable to communicate orally in conversation. She has limited muscle control of her hands but can use one finger to input on a computer keyboard. Her communication needs have changed rapidly since she enrolled in college and began to make career decisions for future employment. Although Patricia understands clearly what others are saying, she is unable to express her thoughts adequately. She needs to be able to communicate effectively with others before making final career plans and entering the job search.

Vocational Rehabilitation Counselor

Objective:

To establish the student in competitive employment.

- Could assistive technology increase her employment opportunities? (S/LP), (ATS)

Disability Services Counselor

Objective:

To assist the student to improve her academic standing and completion of required college course work.

- Would assistive technology provide her with a functional communication system that will allow her to complete her college requirements? (S/LP), (VR)

<p>Career Services Counselor <u>Objective:</u> To provide career counseling based on the student's interests and abilities.</p> <ul style="list-style-type: none"> • Would technology increase her career options by improving her communication abilities? (S/LP), (VR) 	<p>Employment Recruiter <u>Objective:</u> To interview and secure graduates for employment.</p> <ul style="list-style-type: none"> • Would assistive technology qualify her for employment by providing a functional communication system? (S/LP), (VR)
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Assistive Technology Solution

Patricia was referred for an evaluation to a speech and language pathologist with special training in augmentative and alternative communication (AAC). It was determined that she needed a communication system with voice output and a system that would be portable to take to classes and use in a future employment setting. She also needed a system with print capabilities. She is now comfortable communicating with others and feels that she has greatly increased her career opportunities.

Other Disabilities

Many students have disabilities that do not necessarily fall into the major categories already discussed in this guide. The degree to which these disabilities affect individuals in the academic or employment setting vary widely. At times it is not the condition itself but the medication that is required to control symptoms that impairs academic or work performance. Common side effects of medications include fatigue, memory loss, shortened attention span, loss of concentration, and drowsiness. In some cases the degree of impairment may vary from time to time because of the nature of the disability or the medication. Some conditions are progressive; others may be stable. A partial list of other disabilities includes: AIDS, arthritis, asthma, burns, cancer, cardiovascular disorders, diabetes mellitus, epilepsy, psychological disorders, and chronic pain.

Possible Deficits	Possible Technology Solutions
<p>Limitations in other disabilities vary widely and may depend on whether the disability is temporary, progressive, or stabilized. Some limitations may be the result of medication necessary to control symptoms. Many functional losses may be similar to those listed elsewhere in this guide and may include: limitations in strength, standing, walking, tolerance to temperature change or extremes in temperature.</p>	<p>Assistive technology solutions may be the same as those listed elsewhere in this guide. Solutions would need to be disability specific based on the individual's abilities and needs. Solutions for problems related to side effects of medication may be found under some of the technology solutions for persons with learning disabilities. Solutions for limitations of strength and movement may be found under technology solutions for persons with mobility/orthopedic impairments.</p>

Case Study of a Student With A Psychological Disability

Capitalized initials in parenthesis refer to Specialist (page 27)
who may provide technology-related information, referrals, and/or sources of devices and equipment.

Vic is a senior majoring in business. The side effects of his medication to control depression include: interference with concentration, diminished ability to attend to long lectures, and problems completing assignments on time. Vic needs to increase his concentration and duration of attentiveness. He also wants to become better organized and complete assignments in a timely manner.

<p>Vocational Rehabilitation Counselor <u>Objective:</u> To establish the student in competitive employment.</p> <ul style="list-style-type: none"> • Could assistive technology improve his employment opportunities? (ATS), (CP), (Psy) 	<p>Disability Services Counselor <u>Objective:</u> To assist the student to improve his academic standing.</p> <ul style="list-style-type: none"> • Would assistive technology improve his ability to attend to class lectures, and complete assignments on time? (ATS), (Psy)
<p>Career Services Counselor <u>Objective:</u> To provide career counseling based on the student's interests and abilities.</p> <ul style="list-style-type: none"> • Would technology increase his career options by improving his organization skills? (VR), (ATS) 	<p>Employment Recruiter <u>Objective:</u> To interview and secure graduates for employment.</p> <ul style="list-style-type: none"> • Would assistive technology improve his qualifications for employment? (ATS)

Assistive Technology Solution

Vic received an assistive technology evaluation and was trained to use a computer software program that assisted him to organize his work. With this program he created outlines of his materials using colors and shapes to increase interest and concentration, as well as to improve organization and timeliness of assignments. Vic hopes to transfer his specialized computer programs to the employment setting to assist him to be organized and produce his work on schedule.

Specialists

<u>ATS</u>	<u>Assistive Technology Specialists</u> Provides assistive technology evaluation and training
<u>Au</u>	<u>Audiologist</u> Evaluates and prescribes devices for hearing loss
<u>CP</u>	<u>Computer Programmer</u> Modifies existing programs, develops new programs, determines usefulness of programs
<u>ES</u>	<u>Educational Specialists</u> Assesses specific educational functional levels and learning preferences
<u>LD</u>	<u>Learning Disabilities Specialist</u> Assesses specific learning deficits and recommends accommodations
<u>NP</u>	<u>Neuro-psychologist</u> Assesses specific neurological issues that may impede learning or other cognitive functions
<u>O/MS</u>	<u>Orientation and Mobility Specialists</u> Assesses the ability of an individual to benefit from such techniques as navigation canes and companion animals for people who are blind

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<u>Or</u>	<u>Orthotist</u> Fits devices that compensate for physical limitations of the spine and limbs
<u>OT</u>	<u>Occupational Therapist</u> Evaluates muscle control, assesses visual acuity, scanning perception, and fields; assesses seating
<u>Phs</u>	<u>Physiatrist</u> Specializes in physical and rehabilitative medicine
<u>Phy</u>	<u>Physician</u> Determines general health and prognosis
<u>Pro</u>	<u>Prosthetist</u> Fits devices that replace missing limbs or limb segments
<u>Psy</u>	<u>Psychologist</u> Evaluates learning potential and counseling needs
<u>PT</u>	<u>Physical Therapist</u> Evaluates physical strength and functioning
<u>RE</u>	<u>Rehabilitation Engineer</u> Evaluates, modifies, designs and fabricates customized devices

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- RT Recreational Therapist
Promotes recreational and leisure activities
- S/LP Speech/Language Pathologist
Assesses communication abilities and recommends specialized aids
- SM Seating and Mobility Specialist
Evaluates, modifies, designs and fabricates seating and mobility needs to improve function and lessen or prevent problems
- SW Social Worker
Determines need for community resources
- T Teacher: Special education, classroom teacher
Provides information on academic performance
- VE Vocational Evaluator
Assesses potential for employment
- VM Vehicle Modifier
Provides vehicle modifications and assesses person's abilities to drive
- VR Vocational Rehabilitation Counselor
Assesses employment potential and identification of career goals

Resources

Funding Agencies

This list represents a few agencies and programs that may assist with information or funding.

Medicaid

Federally sponsored state implemented medical insurance program for SSI or welfare recipients.

Medicare

Federal medical insurance program administered by Social Security.

Private Insurance

Determinations based on need, diagnosis, prognosis, and type of equipment.

CHAMPUS

Federal insurance program for military personnel families.

State Vocational Rehabilitation Services

Adaptive devices to enhance and promote employment.

State Education Services

Children ages 3-21 served by local school district.

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Electronic Communication

This list represents a few of the electronic mail resources for adaptive technology.

EASI: Equal Access to Software and Information
Provides information about developments and advancements within the adaptive computer technology field. To subscribe send an e-mail letter to

<EASI@SJUV.M.STJOHNS.EDU>

with the command

SUB EASI and your name

Disability Student Services in Higher Education
Serves as a communication vehicle for those interested in the provision of services to college students with disabilities. To subscribe send an e-mail letter to

LISTSERV@UBVM.CC.BUFFALO.EDU

with the command

SUBSCRIBE DSSHE-L YOURFIRSTNAME
YOURLASTNAME

Database

ABLEDATA

National database of assistive technology information on over 19,000 rehabilitation products available on disc or CD-ROM. For more information, call (800) 227-0216.

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Organizations

This list represents only a few of the many organizations that have an interest in technology and may provide information, referrals or services.

AHEAD Association on Higher Education and Disability

P. O. Box 21192
Columbus, OH 43221-0192
Phone: (614) 488-4972

IBM Independence Series Information Center

1000 NW 51st Street
Boca Raton, FL 33432
Phone: (800) 426-4832
TT: (800) 426-4833

Job Accommodation Network (JAN)

WVU P. O. Box 6080
Morgantown, WV 26506
Phone: (304) 293-7186 or (800)526-7234

Closing the Gap Annual Resource Directory Closing the Gap Newsletter

P. O. Box 68
Henderson, MN 56044
Phone: (612) 248-3294

RESNA

Rehabilitation Engineering and Assistive Technology
Society of North America
1700 N. Moore Street, Suite 1540
Arlington, VA 22209
Phone: (703) 524-6686
TTY: (703) 524-6639

Trace Research and Development Center Waisman Center

1500 Highland Avenue
Madison, WI 53705
Phone: (608) 262-6966
TT: (608) 263-5408
Internet: info@trace.wisc.edu

WDSG

Worldwide Disability Solutions Group
Apple Computer, Inc.
1 Infinite Loop, MS 38-DS
Cupertino, CA 95014
Phone: (800) 600-7808
TT: (800) 755-0601
Internet: applewdsg@euserld.com

State Tech Act Contacts

Grantees may change. If address is incorrect for the state, consult RESNA under Resources (page 30).

1. **Alabama** Statewide Technology Access and Response (Star) System for Alabamians with Disabilities
2125 East South Boulevard
P.O. Box 20752
Montgomery, AL 36120-0752
Phone: (334) 613-3480 TDD: (334) 613-2519
2. **Assistive Technologies of Alaska**
701 E. Tudor Road, Suite 280
Anchorage, AK 99503-7445
Phone: (907) 563-0138
Internet: atadvr@corcom.com
3. **American Samoa** Assistive Technology Project
Division of Vocational Rehabilitation
Department of Human Resources
Pago Pago, American Samoa 96799
Phone: 0 11(684) 699-1529 0 11 (684) 233-7874
4. **Arkansas** ICAN (Increasing Capabilities Access Network)
Department of Education
Vocational and Technical Education Division
Arkansas Rehabilitation Services
2201 Brookwood Drive, Suite 117
Little Rock, AR 72202
Phone/TDD: (501) 666-8868
Internet: 102503.3602@compuserve.com
5. **California** Assistive Technology Systems (CATS)
California Department of Rehabilitation (Lead Agency)
830 K Street
Sacramento, CA 95814
Phone: (916) 324-3062 TDD (916) 324-7386
Internet: doroa.bpremo@hw1.cahwnet.gov
6. **Colorado** Assistive Technology Project
Rocky Mountain Resource and Training Institute
1391 N. Speer Boulevard, Suite 350
Denver, CO 80204
In state only (800) 255-3477 Phone: (303) 534-1027
TDD: (303) 534-1063
Internet: rmrti@essex.uchsc.edu
7. **Connecticut** Assistive Technology Project Bureau of Rehabilitation Services
10 Griffen Road North
Windsor, CT 06095
Phone: (860) 298-2042 TDD: (860) 298-2018
Internet: cttap@aol.com
8. **Delaware** Assistive Technology Initiative (DATI)
Applied Science and Engineering Laboratories
University of Delaware/A.I. duPont Institute
P.O. Box 269
Wilmington, DE 19899-02609
Phone: (302) 651-6790 TDD: (302) 651-6793
Internet: dati@asel.udel.edu

9. **District of Columbia Partnership for Assistive Technology (DCPAT)**
801 Pennsylvania Avenue, S.E., Suite 210
Washington, D.C. 20003
Phone: (202) 546-9163 TDD: (202) 546-9168
Internet: wap1@mhg.edu
10. **Florida Alliance for Assistive Services and Technology (FAAST)**
2002-A Old St. Augustine Road
Tallahassee, FL 32399-0696
Phone/TDD: (904) 487-3278
Internet: faast@freenet.scri.fsu.edu
11. **Georgia Tools for Life**
Division of Rehabilitation Services
2 Peachtree Street, NW Suite 23-411
Atlanta, GA 30303-3142
Phone: (404) 657-3084 TDD: (404) 657-3085
Internet: 102476.1737@compuserve.com
12. **Guam System for Assistive Technology**
University Affiliated Program-Developmental Disabilities
House #12 Dean's Circle
University of Guam
UOG Station
Mangilao, Gaum 96923
Phone: (671) 734-9309/9472/6531
TDD: (671) 734-8378
Internet: uapservi@uog.edu
13. **Hawaii Assistive Technology Training and Service (HATTS) Project**
677 Ala Moana Boulevard, Room 403
Honolulu, HI 96813
Phone/TDD: (808) 532-7110
Internet: bfi@pixi.com
14. **Idaho Assistive Technology Project**
129 West Third Street
Moscow, ID 83843
Phone: (208) 885-3559 TDD: (208) 885-3621
15. **Illinois Assistive Technology Project**
528 S. 5th Street
Suite 100
Springfield, IL 62701
Phone: (217) 522-7985 TDD: (217) 522-9966
Internet: iatp@cencom.net
16. **Indiana A.T.T.A.I.N. Project**
(Accessing Technology Through Awareness in Indiana)
Indiana Family and Social Services Administration
Division of Disability, Aging and Rehabilitative Services
402 W. Washington Street, Room W453
P.O. Box 7083
Indianapolis, IN 46207-7083
Phone/TDD: (800) 545-7763
Internet:
cris_fulford@insped.ccmail.compuserve.com

17. Iowa Program for Assistive Technology (IPAT)
Iowa University Affiliated Program
University Hospital School
Iowa City, IA 52242-1011
Phone Instate TDD: (800) 348-7193
Phone National Voice/TDD: (800) 331-3027
Internet: james-hardy@uiowa.edu
18. Assistive Technology for Kansas Project
2601 Gabriel
P.O. Box 738
Parsons, KS 67357
Phone: (316) 421-8367 TDD: (316) 421-0954
Internet: chuck@parsons.lsi.ukans.edu
19. Kentucky Assistive Technology Service (KATS)
Network
P.O. Box 757
Frankfort, KY 40602-0757
Phone/TDD: (502) 564-2733
Internet: katsnet@iglou.com
20. Louisiana Assistive Technology Access Network
(LATAN)
P.O. Box 14115
Baton Rouge, LA 70898-4115
Phone: (504) 925-9500
Internet: latanstate@aol.com

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21. Maine Consumer Information and Technology Training
Exchange (CITE)
Maine CITE Coordinating Center
Education Network of Maine
46 University Drive
Augusta, ME 04330
Phone/TDD: (207) 621-3195
Internet: davidstodkford@dssdoc.ddp.state.
22. Maryland Technology Assistance Program (TAP)
Governor's Office for Individuals with Disabilities
300 W. Lexington Street, Box 10
Baltimore, MD 21201
Phone/TDD: (410) 333-4975
Internet: mdtap@clark.net
23. Massachusetts Assistive Technology Partnership
(MATP) MATP Center
Children's Hospital
1295 Boylston Street
Suite 310
Boston, MA 02215
Phone: (617) 355-7820 TDD: (617) 355-7301
Internet: brewer_ju@a1.tch.harvard.edu
24. Michigan TECH 2000 Project
Michigan's Assistive Technology Project
3815 West St. Joseph Hwy.
Lansing, MI 48917-3623
Phone: (517) 334-6502 TDD: (517) 334-6499
Internet: twist@mrs.mjc.state.mi.us

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25. **Minnesota STAR Program**
300 Centennial Building
658 Cedar Street
St. Paul, MN 55155
Phone: (612) 296-2771 TDD: (612) 296-9478
Internet: mnstars@gteens.com
26. **Mississippi Project START**
(Success Through Assistive/Rehabilitative Technology)
P.O. Box 1698
Jackson, MS 39215-1698
Phone/TDD: (601) 987-4872
In state only: (800) 852-8328
Internet: spower@netdoor.com
27. **Missouri Assistive Technology Project**
4731 South Cochise, Suite 114
Independence, MO 64055-6975
Phone : (816) 373-5193 TDD: (800) 647-8558
Internet: matpmo@qni.com
28. **MonTECH Program**
MUARID, The University of **Montana**
634 Eddy Avenue
Missoula, MT 59812
Phone: (406) 243-5676 TDD: (800) 732-0323
Internet: leech@selway.umt.edu

29. **Nebraska Assistive Technology Project**
301 Centennial Mall South
P.O. Box 94987
Lincoln, NE 68509-4987
Phone/TDD: (402) 471-0734
Internet: mschultz@nde.4nde.state.ne.us
30. **Nevada Assistive Technology Collaborative**
Rehabilitation Division
Community Based Services
711 South Stewart Street
Carson City, NV 89710
Phone: (702) 687-4452 TDD: (702) 687-3388
Internet: nvreach@gteens.com
31. **New Hampshire Technology Partnership Project**
Institute on Disability
#14, Ten Ferry Street
The Concord Center
Concord, NH 03301
Phone/TDD: (603) 224-0630
Internet: mjpawlek@christa.unh.edu
32. **New Jersey Technology Assistive Resource Program**
(TARP)
135 East State Street
CN 938
Trenton, NJ 08625
Phone: (609) 292-7498 TDD: (800) 382-7765
Internet: njdvr@gteens.com

33. **New Mexico** Technology Assistance Program
435 St. Michael's Drive, Building D
Santa Fe, NM 87505
Phone/TDD: (505) 827-3532
Internet: nmdvrtap@aol.com
34. **New York** State TRAUD Project
NYS Office of Advocate for Persons with Disabilities
One Empire State Plaza, Suite 1001
Albany, New York 12223-1150
Phone: (518) 474-2825 TDD: (518) 473-6005
Internet: d.buck@oapwd.state.ny.us
35. **North Carolina** Assistive Technology Project
Division of Vocational Rehabilitation Services
1110 Navaho Drive, Suite 101
Raleigh, NC 27609
Phone/TDD: (919) 850-2787
Internet: <http://www2.coastalnet.com/~cn3106>
36. **North Dakota** Interagency Program For Assistive Technology (IPAT)
P.O. Box 743
Cavalier, ND 58220
Phone/TDD: (701) 265-4807
Internet: leej@pioneer.state.nd.us

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37. **Commonwealth of the Northern Mariana Islands**
Assistive Technology Project
Governor's Developmental Disabilities Council
P.O. Box 2565
Saipan, MP 96950
Phone/TDD: (670) 322-3014
Internet: dd.council@saipan.com
38. **Ohio** T.R.A.I.N.
Ohio Super Computer Center
1224 Kinnear Road
Columbus, OH 43212
Phone/TDD: (614) 292-2426
Internet: dhuntt@mailcar.ovl.osc.edu
39. **Oklahoma** ABLE Tech
Oklahoma State University Wellness Center
1514 W. Hall of Fame Road
Stillwater, OK 74078-0618
Phone: (405) 744-9478 TDD: (800) 257-1705
Internet: mljwell@okway.okstate.edu
40. **Oregon** Technology Access Through Life Needs (TALN) Project
Access Technologies Inc.
1257 Ferry Street, S.E.
Salem, OR 97310
Phone/TDD: (503) 361-1201
Internet: ati@orednct.org

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41. **Pennsylvania's Institute on Assistive Technology (PIAT)**
Institute on Disabilities/JAP
Ritter Annex 433 (004-00)
Temple University
Philadelphia, PA 19122
Phone/TDD: (800) 750-7428
Internet: piat@astro.ocis.temple.edu
42. **Puerto Rico Assistive Technology Project**
University of Puerto Rico, Medical Sciences Campus
College of Related Health Professions
Department of Communicological Disorders
Box 365067
San Juan, PR 00936
Phone in Puerto Rico: (800) 981-6033
Phone from U.S.: (800) 496-6035
TDD: (809) 754-8034
Internet: pratap@rcmad.upr.clu.edu
43. **Rhode Island Assistive Technology Access Project (ATAP)**
Office of Rehabilitation Services
40 Fountain Street
Providence, RI 02903-1898
Phone: (401) 421-7005 Instate only: (800) 752-8008
TDD: (401) 421-7016
Internet: ab195@osfn.rhlinet.gov

44. **South Carolina Assistive Technology Project**
Department of Vocational Rehabilitation (Lead Agency)
Post Office Box 15
1410-C Boston Avenue
West Columbia, SC 29171-0015
Phone/TDD: (803) 822-5404
Internet: scatp@scsn.net
45. **South Dakota Link**
1925 Plaza Boulevard
Rapid City, SD 57702
Phone/TDD: (605) 394-1876
Internet: reed@sdtie.sdserv.org
46. **Tennessee Technology Access Project**
710 James Robertson Parkway
Gateway Plaza, 11th Floor
Nashville, TN 37243-0675
Phone: (615) 532-6530 In-state only: (800) 732-5059
TDD: (615) 532-6612
Internet: akoshakj@mail.state.tn.us
47. **Texas Assistive Technology Partnership**
The University of Texas at Austin
Department of Special Education
EDB 306/35300
Austin, TX 78712-1290
Phone: (800) 828-7839 TDD: (512) 471-1844
Internet: johnz@utxvms.cc.utexas.edu

48. **U.S. Virgin Island Technology-Related Assistance for Individuals with Disabilities (TRAID)**
#2 John Brewers Bay
St. Thomas, U.S. VI 00802-0990
Phone: (809) 693-1323
Internet: yhabtey@gecko.uvi.edu
49. **Utah Assistive Technology Program**
Utah State University
Center for Persons with Disabilities
UMC 6855
Logan, UT 84322-6855
Phone/TDD: (800) 333-8824
Internet: mmenlove@cc.usu.edu
50. **Vermont Assistive Technology Project**
103 South Main Street
Weeks Building, First Floor
Waterbury, VT 05671-2305
Phone/TDD: (802) 241-2620
Internet: mike@dad.state.vt.us
51. **Virginia Assistive Technology System (VATS)**
8004 Franklin Farms Drive
P.O. Box K-300
Richmond, VA 23288-0300
Phone/TDD: (804) 662-9990
Internet: vatskhk@aol.com

52. **Washington Assistive Technology Alliance**
DSHS/DVR
P.O. Box 45340
Olympia, WA 98504-5340
Phone: (206) 685-6836
Internet: debcook@u.washington.edu
53. **West Virginia Assistive Technology System (WVATS)**
University Affiliated Center for Developmental Disabilities
Airport Research and Office Park
955 Hartman Run Road
Morgantown, WV 26505
Phone: (304) 293-4692 TDD: (304) 293-4692
Internet: stewiat@wvnm.wvnet.edu
54. **Wisconsin Assistive Technology Program (WisTech)**
Division of Vocational Rehabilitation
P.O. Box 7852
Madison, WI 53707-7852
Phone/TDD: (608) 243-5674
Internet: trampf@aol.com
55. **Wyoming's New Options in Technology (WYNOT)**
Division of Vocational Rehabilitation
1100 Herschler Building
Cheyenne, WY 82002
Phone/TDD: (307) 777-7450
Internet: wy813@wydsprod.state.wy.us

Check List for Comprehensive Career Planning

Assistive Technology is a component in the comprehensive career planning process for college students with disabilities.

The following checklist provides a guide for services that need to be included.

Does the student have adequate career decision making skills?

- Has the student researched possible majors by:
using the college catalog? ☐
- interviewing an advisor? ☐
- joining campus/community organization? ☐

• Has the student researched possible job preferences within the chosen major by:

- conducting informational interview with a professional in the field of interest? ☐
- reviewing career exploration books such as the DOT, OOH, GOE? ☐

• Has the student completed career exploration inventories including:

- interest? ☐
- personality? ☐
- work values? ☐

Does the student have the skills and abilities necessary to qualify for the job?

- Does the student know the essential job functions in the chosen job preference? ☐
- Can the student perform the entry level requirements? ☐
- Does the student have computer skills? ☐
- Has the student had an assistive technology evaluation? ☐

Does the student need job accommodations to perform the essential functions?

• Has the student had access to necessary assistive technology? ☐

• Is the student aware of options for purchasing technology such as:
personal resources? ☐

Vocational Rehabilitation? ☐

service agencies? ☐

employer? ☐

other (insurance companies, Veteran's Administration)? ☐

• Does the student know how to ask for job accommodations? ☐

Does the student have adequate job search skills?

• Does the student have a current, professional resume? ☐

• Does the student know how to write a cover letter that introduces his/her skills? ☐

• Does the student have disability disclosure skills? ☐

• Does the student have interview skills? ☐

• Is the student aware of the importance of personal appearance? ☐

• Does the student know where to find job leads? ☐

• Is the student familiar with legislative acts designed to provide an equal employment opportunity? ... ☐

Definition of Terms

Abbreviation expansion program - a series of letters, words, or sentences are assigned to one or more keystrokes

Alternate keyboards - provide a variety of ways to input information into a computer

Assistive listening devices (ALD) - amplify sound by focusing microphone on the speaker in public situations

Audio signals, tones - transmit a signal that can be heard to direct the path of traveler (usually in public places like train stations)

Augmentative and Alternative Communication (AAC) - aids, strategies, and techniques designed to enhance a person's existing communication skills

Braille - a system developed by Louis Braille using tactile, raised dots as symbols for printed material

Braille notetaker - small battery operated device with a braille keyboard to enter information

Braille printer - specialized printer for printing out documents in braille

Brailled signage - room, floor, or building namesigns embossed with braille letters as directional cues for people who are blind

Calculator (talking) - device that speaks numbers as they are entered and speaks the mathematical answer

Captioning systems - provide text messages of dialogue on video screen

Closed circuit television (CCTV) - scans the printed page with a special television camera and transfers the enlarged image to a computer monitor

Computer aided transcription - utilizes a personal computer, large display monitor and word-processing software to increase accessibility to public meetings

Computer-assisted access to text telephone - personal computer adapted to talk with a text telephone

Digitized speech - digitally recorded human speech for auditory output

Electronic amplification systems - contain a microphone, amplifier, and speaker used to increase access to communication

Electronic travel aids - transmit a signal that is bounced back from objects in the path of the traveler or may be a wide angle, high intensity light beam

Enlarged text - hardware or software that provides magnification of characters on the computer screen or in printed output

Ir-track tape recorder - allows the user to adjust the speed

Grammar and spell checkers - show grammatical or spelling errors and offer suggestions to correct

Headpointer - headset and assistive software that replaces the keyboard and mouse to allow a person to control the computer by pointing at a scanning keyboard

Keyguard - a hard plastic cover with holes for each key designed to prevent the user from striking the wrong key

Large print software - specialized computer software that captures text entered on keyboard and increase the letter size on the screen

Minikeyboard - small keyboard that allows a person with limited range of motion in hands and arms to control the mouse and type on a computer

Modification of keyboard control system - software programs that modify the standard keyboard to simplify operation of the keyboard or replace the mouse

Morse code input - uses a switch to connect to an adapter that translates dots and dashes into standard keyboard signals

Mouth operated joystick - allows a person to enter data or text using an on-screen keyboard

Multisensory reading program - allows the user to customize the text size, background and foreground colors on the monitor and the voice characteristics

Optical character recognition (OCR) - software works with a scanner to convert printed material into a standard computer file

Reading comprehension programs - assist the user to improve reading skills

Refreshable braille displays - an external device that allows information on computer screen to be displayed in braille and to change as the user moves the cursor or display window around the screen

Relay services - relay bureaus place calls to persons who do not have a text telephone

Scanner - converts text from an image from a printed page to a computer file

Screen enlargement - focuses on a portion of the screen and enlarges it

Screen reader - software/hardware applications that convert computer generated text to artificial speech which is spoken through speech synthesizers

Signaling systems - transform one type of signal to another to allow persons to live more independently

Speech output voice box - portable touch activated speech output communication aid

Speech synthesizer - receives information going to the screen (letters, words, numbers) and speaks them outloud

Split keyboard - an adjustable configuration of the keyboard

Switches and switch software - a variety of options to input data into a computer

Synthesized speech - speech captured by the speech synthesizer and spoken outloud

Tactile building, floor marking and maps - brightly colored or raised markings on surfaces to increase awareness of potential hazards for people who use long canes

Tape recorder with indexing capability - recorder which has special capability for making important text on an audio tape

Telecommunication Device for the Deaf (TDD) - a device that allows a person to transmit typed in messages by telephone

Telephone amplification systems - amplified telephone handsets attach to the phone

Text telephone - phone modem linked with a teletypewriter allows users to type conversations

Touch pad - a touch-sensitive device that allows computer input without the use of a keyboard

Touch window - a device placed on the computer window that allows the computer to respond to touch

Trackball - a moveable ball that replaces the mouse and allows easier cursor control

Voice recognition program - the voice of the user inputs data and controls the computer functions

Word prediction programs - permit the user to select a word from an on-screen list generated by the computer and based on the first 2 letters typed by the user

Writing guide - resembles a stencil cut out

Much of the assistive technology listed here refers to computer technology because computer skills are essential in professional employment today.

The information contained in this guide was based on research with college students with disabilities conducted by:

Project PAACS
(Postsecondary Accommodations for Academic and Career Success)
Mississippi State University
P. O. Box 9727
Mississippi State, MS 39762

and
Comprehensive Assistive Technology Center (CATC)
Mississippi State University
P. O. Box 9736
Mississippi State, MS 39762

Anne R. Thompson, Ph.D., CRC, Director
Project PAACS
Phone: (601) 325-7917
TDD Relay System: (800) 582-2233
FAX: (601) 325-3263
Internet: art1@ra.msstate.edu

Leslie L. Bethea, M.S., CRC, Coordinator
Project PAACS
Phone: (601) 325-7919
TDD Relay System: (800) 582-2233
FAX: (601) 325-3263
Internet: LBethea@ra.msstate.edu

Harry F. (Bud) Rizer, Ed.D., Director
Comprehensive Assistive Technology Center
Phone: (601) 325-1028
TDD: (601) 325-0520
FAX: (601) 325-0896
Internet: rizer@catc.msstate.edu
www.msstate.edu/dept/catc/

Melanie D. Hutto, Ph.D., CRC, LPC
Research Scientist II
College of Education
Phone: (601) 325-3717
FAX: (601) 325-8784
Internet: mdh1@ra.msstate.edu

**Project PAACS
Mississippi State University
P. O. Box 9727
Mississippi State, MS 39762**

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